

REMARKS

Claims 17-19 and 23-31 are rejected under 35 USC 103 as being unpatentable by Fogagnolo et al. (US 2003/0019367 A1, inadvertently stated in the Office Action as US 2003/00193367)(“Fogagnolo”) in view of Difiore (US 5,699,049).

The claims currently present in this application are claims 17-19 and 23-31.¹ Claim 29 has been amended to correct two typographical errors. No new matter has been added.

Rejection of Claims 17, 23, and 29

As recited in claims 17, 23 and 29, a capacitive proximity switch is provided for being moved along the length of a pipe wherein a pipe is jammed at an unknown location so as to sense whether the capacitance within a pipe is changed and for outputting an enable signal when the capacitance has changed. This feature is not taught or suggested in Fogagnolo, the sole reference cited in the Section 103(a) rejection in the Office Action of October 8, 2004. The present Office Action adds another reference, Difiore, for a teaching that “detection of a clog within a pipe or conduit to avoid undesirable situation is old in the art.” The Office Action states that it would be “obvious to one skilled in the art to move the sensor in the modified Fogagnolo to different locations along the pipe to determine the clog location because one skilled in the art would have readily recognized that the capacitive sensor would produce a signal to indicate the absence of water inside the pipe where the clog exists.” Neither Fogagnolo nor Difiore teach or suggest such a modification or means for the detection of the location of a clog in a pipe. In fact, these references teach to the contrary by disclosing fixed sensors that merely detect the level of water in a container. As shown in more detail below, the motivation for such a modification for such a purpose is found only in the teaching of the present application. This is an improper use of hindsight. The Section 103(a) rejection should be withdrawn.

As noted in the applicants’ uncontradicted response to the Office Action of October 8, 2004 (filed on January 6, 2005), at page 5, Fogagnolo teaches away from concluding that the absence of liquid in the pipe wherein liquid should be present or flowing through would suggest

¹ The Office Action incorrectly states that Claims 19-31 are pending. Claims 20-22 were cancelled without prejudice in the Amendment dated January 6, 2005.

that there is a clog in the pipe. Furthermore, the January 6, 2005 response stated at page 6 that "Fogagnolo fails to disclose o[r] fairly suggest a method comprising 'moving a capacitive proximity switch along the length of a pipe wherein a clog is jammed at an unknown location,' as recited in claim 17, or a detector comprising a switch 'provided for being moved along the length of a pipe wherein a clog is jammed at an unknown location,' as claimed in claims 23 and 29."

The Examiner concedes in the present Office Action that Fogagnolo fails to disclose that the detection of the presence of water inside the pipe is for clog detection purposes. The Examiner also concedes that the structure of the Fogagnolo device would have to be modified in order to move its sensor to different locations with respect to the pipe in order "provide a signal to indicate the absence of water inside the pipe where the clog exists."

The Examiner is respectfully reminded that to establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine the references' teaching. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. M.P.E.P. § 2142. No suggestion or motivation exists in the references currently of record, Fogagnolo and Difiore, to modify the Fogagnolo reference as suggested by the Examiner.

As recited in paragraphs 0021 and 0026 of Fogagnolo, the capacitive sensor 30 is applied externally of tube 24, consisting of a U-bent metal sheet partly surrounding tube 24, and the capacitive sensor 30 must be located in the close vicinity of the dedicated electronic circuit. Thus, Fogagnolo only teaches the sensor 30 should be located at a fixed position in order to measure capacitance changes due to water movement within the tube and thus determine whether the water level is too low.

Difiore teaches the detection of a situation in which a clog exists, but not the location of the position of a clog, by using a float switch to determine whether water has backed up a pipe due to a clog. As recited in col. 8, lines 36-51 in Difiore in connection with a representative one of Difiore's embodiments, liquid will flow into the sensing chamber 540 of the sensor unit 500, and will cause the float-magnet 576 of the switch 560 to be buoyed upwardly to operate the

switch 560 if abnormal flow within the sanitary drain line 510 causes the sanitary drain line 510 to backfill with liquid at the location of the sensor unit 500, and thus causing a signal to be transmitted along the wire 525 to the display panel 1100 to illuminate an associated light on the panel 1100 in the manner that a signal from the sensor unit 400 is sent along the wire 425 causing the light 1010 of the panel 1000 to be illuminated. No reason exists for moving the sensor unit 500 (or any of sensor units 400, 600, 700, 800 or 900) up and down the pipe because the float-magnet 576 is buoyed upward by the backed-up liquid to operate the switch 560 and thus indicate that the liquid has backed up, thereby indicating the existence of a clog (but not its location).

Fogagnolo and Difiore therefore do not teach or suggest moving the sensor along the pipe to detect the unknown location of the clog. Under M.P.E.P. § 2143, the prior art reference(s) must teach or suggest all the claim limitations to establish a *prima facie* case of obviousness. The cited references do not teach the above-quoted limitations of claims 17, 23, and 29 concerning the movement of a capacitive proximity switch.

Furthermore, the teachings of the references are not sufficient to render the claims *prima facie* obvious if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (C.C.P.A. 1959).

The sensors in Fogagnolo and Difiore are required to work at fixed locations. The proposed modification or combination of the prior art asserted by the Examiner requires a change of the principle of operation of these references, and thus, the teachings of the references are not sufficient to render the claims *prima facie* obvious.

Liquid will flow into the sensing chamber 540 of the sensor 500 in Difiore, and will cause the float-magnet 576 of the switch 560 to be buoyed upwardly to operate the switch 560. Thus, Difiore teaches that the sensors are disposed in the pipes and contact with the liquid flowing within the pipe. Fogagnolo teaches that the capacitive sensor 30 is external to the tube 24 (paragraph 0021) and further teaches that the sensor should not be disposed in contact with the liquid (paragraphs 0006-0007). In view of this, there is no reason to modify Fogagnolo in view of Difiore to be a clog location detector.

Moreover, even if the two references can be combined, the sensors in Fogagnolo and Difiore can only passively detect a liquid level to determine whether a pipe is clogged, rather than the location of the clog in the pipe. The combination of these references therefore does not have a reasonable expectation of success.

An obviousness rejection based on Fogagnolo and/or Difiore therefore cannot meet the three criteria in M.P.E.P. § 2142. No other reference is cited and no "common knowledge in the art" has been officially noticed for making the proposed modification to Fogagnolo to permit its sensor to be moved to different locations along the pipe to determine the location of a clog. A *prima facie* case of obviousness therefore cannot be established without the use of the teaching of the specification of this application, *i.e.*, by the prohibited use of hindsight. See M.P.E.P. § 2142 ("The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.") The Section 103(a) rejection of claims 17, 23 and 29 should be withdrawn.

The Section 103(a) rejection of these claims is the only one pending. Applicants therefore respectfully submit that claims 17, 23 and 29 should be allowed.

Rejection of Claims 18-19, 24-28, and 30-31

Claims 18-19, 24-28, and 30-31 also should be allowed, at least by virtue of their dependency from claims 17, 23 and 29. See M.P.E.P. § 2143.03 ("If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)").

* * *

In view of the above, the Applicants submit that the application is now in condition for allowance and respectfully urge the Examiner to pass this case to issue.

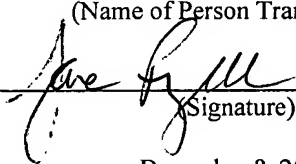
The Commissioner is authorized to charge any additional fees that may be required or credit overpayment to deposit account no. 12-0415. In particular, if this response is not timely filed, the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 C.F.R. § 1.136(a) requesting an extension of time of the number of

months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 12-0415.

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December 8, 2005
(Date of Transmission)

Jane Penzell
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(Signature)

December 8, 2005
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